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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,256

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EXAMINER

RUSH, ERIC

ART UNIT

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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,256	Applicant(s) KOSHIZEN ET AL.	
	Examiner ERIC RUSH	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/20/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is responsive to the amendment and remarks received 30 September 2008. Claims 19 – 40 are currently pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. The rejection to claim 19 under 35 U.S.C. 112, second paragraph, is withdrawn in view of the amendment and remarks received on 30 September 2008.
4. Claims 19 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation “the person class” lacks antecedent basis and it is unclear to what the intended meaning of the limitation is. For the purposes of examination the Examiner will treat “the person class” as being related to an image or images of a recognizable person.
5. Claims 19 and 30 recite the limitation "the person class" in pages 2, 3 and 6, of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 19 -20, 22 – 31 and 33 - 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8th International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001 in view of Kim et al. U.S. Publication No. 2003/0215115 A1.

- With regards to claims 19 and 30, Heisele et al. teach a method and system for recognizing faces of persons, comprising: a training module configured to train a facial component recognition system to recognize a facial component; (Heisele et al., Section 4, Section 4.1) a population module configured to populate a first knowledge base with facial

components and, for each facial component, the facial component's body part classification; (Heisele et al., Figure 3, Section 4.2) a body part module configured to use the first knowledge base to determine, for each facial component in a plurality of facial components, a body part classification for the facial component, wherein the plurality of facial components comprises facial components extracted from facial identification training image data of a face of a first person at a first viewpoint and a face of a second person at a second viewpoint; (Heisele et al., Section 5 Paragraph 1 – Paragraph 2) and an indicator component module configured to determine, from said plurality of facial components and their determined body part classifications, a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person and a second facial component that maximizes a posterior probability that the person class of the second facial component is the second person. (Heisele et al., Section 2, Section 2.1, Section 2.2, Sections 4.1 - 4.2 and Section 3.2) Heisele et al. disclose using a component based approach to facial recognition. They use a plurality of facial components and input them into a SVM classifier. The components/data are then trained to distinguish a particular face against other face images. The components are combined into a single feature vector for input into the system. Although, Heisele et al. do not specifically determine a facial component that maximizes a posterior probability that

the person class of the first (or second) facial component is the first (or second) person it is known that the training procedure will give weights to each of the components individually with the most weight being associated with the facial component that maximizes a posterior probability that the person class of the first facial component is the first person. Kim et al. teach determining weights of individual facial components to aid in the recognition (discrimination between facial images) process of a person. (Kim et al., Page 3 Paragraph 0035, Page 4 Paragraphs 0051 - 0059) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Heisele et al. with the teachings of Kim et al. This modification would have been prompted because both inventions are directed towards similar subject matter, component based facial recognition. Furthermore, the modification would have been encouraged in order to give the most weight to a singular facial component that divides the hyper-plane which distinguishes between persons.

- With regards to claims 20 & 31, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, wherein a body part classification of the first facial component and a body part classification of the second facial component are different. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)

- With regards to claims 22 & 33, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, wherein the indicator component module is further configured to: determine a first conditional probability, that a class is the first person, of the facial components extracted from the facial identification training image data of the face of the first person at the first viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a first posterior probability, that a class is the first person, by multiplying the conditional probability at the first viewpoint by a prior probability, that a class is the first person; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a second conditional probability, that a class is the first person, of facial components extracted from facial identification training image data of the face of the first person at an additional viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) and determine a second posterior probability, that a class is the first person, by multiplying the second conditional probability by the first posterior probability. (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7)

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- With regards to claims 23 & 34, Heisele et al. in view of Kim et al. teach the method and system of claims 22 and 33, respectively, wherein the prior probability, that the class is the first person, comprises one N th where N is a number of person classes. (Heisele et al., Section 4.2, and Section 3.2 Paragraphs 2 - 4)
- With regards to claims 24 & 35, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, further comprising a storage module configured to store, in a second knowledge base, the first facial component and the second facial component. (Heisele et al., Abstract, Section 1 Paragraph 1, and Section 5 Paragraph 1, although Heisele et al. is silent to a storage module it is implicit from the discussion of using SVM recognition for every person in a database as well as the recording of the test set)
- With regards to claims 25 & 36, Heisele et al. in view of Kim et al. teach the method and system of claims 24 and 35, respectively, further comprising a receiving module configured to receive body part classifications of facial components at various viewpoints of a person to be identified; (Heisele et al., Section 5 Paragraph 1 – Paragraph 2) and an identification module configured to identify the person using a facial

component stored in the second knowledge base. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)

- With regards to claims 26 & 37, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, wherein the first viewpoint and the second viewpoint are different. (Heisele et al., Section 5 Paragraph 1 – Paragraph 2 and Paragraphs 5 - 7)
- With regards to claims 27 & 38, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, wherein the training module is further configured to: receive facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components at various viewpoints from the facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 4.1 – 4.2) and train a body part classifier module using the extracted facial components. (Heisele et al., Section 5 Paragraphs 1 - 2)
- With regards to claims 28 & 39, Heisele et al. in view of Kim et al. teach the method and system of claims 27 and 38, respectively, wherein the body part classifier module performs one-versus-all classification. (Heisele et al., Section 4.2 and Section 5 Paragraphs 1 - 2)

- With regards to claims 29 & 40, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively, wherein the body part module is further configured to: receive facial identification training image data of the face of the first person at the first viewpoint and the face of the second person at the second viewpoint; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components from the facial identification training image data; (Heisele et al., Section 4.1 Figures 3 - 4) and determine body part classifications of the extracted facial components using the first knowledge base. (Heisele et al., Section 4.1 Figures 3 - 4)

9. Claims 21 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8th International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001 in view of Kim et al. U.S. Publication No. 2003/0215115 A1, as applied to claims 19 and 30 above, and further in view of Paul Viola, "Complex Feature Recognition: A Bayesian Approach for Learning to Recognize Objects," AI Memo No. 1591, Artificial Intelligence Laboratory, MIT, Cambridge, MA, November 1996.

- With regards to claims 21 & 32, Heisele et al. in view of Kim et al. teach the method and system of claims 19 and 30, respectively. Heisele et al.

fail to teach wherein the indicator component module is further configured to determine the first facial component using Bayesian estimation. Viola teaches wherein the indicator component module is further configured to determine the first facial component using Bayesian estimation. (Viola, Abstract, Figures 1 and 2, and Section 2 Paragraphs 1 – 5) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Heisele et al. in view of Kim et al. to include the teachings of Viola. This modification would have been prompted in order to aid in the efficient processing and recognition of complex images, such as faces. This approach is well known in the art and would be obvious to include in the training algorithm especially when various viewpoints are involved.

Response to Arguments

10. Applicant's arguments with respect to claims 19 and 30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC RUSH whose telephone number is (571)270-3017. The examiner can normally be reached on 7:30AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
Supervisory Patent Examiner, Art
Unit 2624

ER